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1. A composition of matter comprising:

- a solid phase support having one or more spatially discrete regions; and
- a uniform population of substantially identical oligonucleotide tag complements covalently attached to the solid phase support in at least one of the one or more spatially discrete regions, the oligonucleotide tag complements comprising a plurality of subunits, each subunit consisting of an oligonucleotide having a length from three to six nucleotides and each subunit being selected from a minimally cross-hybridizing set.

wherein a subunit of the set and a component of any other subunit of the set would have at least two mismatches.

2. The composition of matter of claim 1 wherein said plurality of said subunits is in the range of from 4 to 10.

3. The composition of matter of claim 2 wherein said solid phase support is a microparticle having a single spatially discrete region.

4. The composition of matter of claim 3 wherein said microparticles is selected from the group consisting of glass microparticles, magnetic beads, and polystyrene microparticles.

5. A composition of matter comprising a mixture of microparticles, each microparticle having polynucleotides of a population attached thereto such that substantially all different polynucleotides in the population are attached to different microparticles.

6. The composition of claim 5 wherein about 10<sup>5</sup> of said polynucleotides are attached to each of said microparticles.

7. The composition of claim 5 wherein said population of said polynucleotides is a population of cDNAs.

8. The composition of claim 7 wherein said population of said cDNAs has a size of from ten to a hundred thousand.

9. The composition of claim 7 wherein tag complements are attached to each of said

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microparticles of said mixture and wherein each of said cDNAs of said population has an oligonucleotide tag attached such that perfectly matched duplexes are formed between the tag complements of said microparticles and the oligonucleotide tags of said cDNAs.

10. ✓ A composition of matter comprising:  
a solid phase support having one or more spacially discrete regions; and  
a uniform population of substantially identical oligonucleotide tag complements covalently attached to the solid phase support in at least one of the one or more spacially discrete regions, the oligonucleotide tag complements being selected from a minimally cross-hybridizing set of oligonucleotides having a length in the range of from 12 to 60 nucleotides and differing from one another by at least two nucleotides.

11. The composition of claim 10 wherein said oligonucleotide tag complements are further selected to form perfectly matched duplexes of approximately equal stability.

12. The composition of claim 10 wherein said oligonucleotide tag complements differ from one another by at least three nucleotides and wherein said solid phase support is a microparticle having a single spacially discrete region.

13. The composition of claim 12 wherein said length of said oligonucleotide tag complements are in the range of from 25 to 40 nucleotides.